

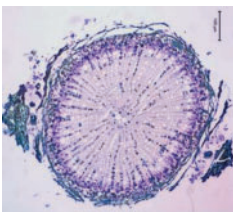
Blossom-end rot in tomato fruit (Invited Review)

Ho and White (pp. 571–581) propose that blossom-end rot is initiated by biochemical events that occur in expanding cells when insufficient Ca^{2+} is available for critical apoplastic and/or cytoplasmic functions. They outline experimental strategies to confirm this hypothesis.



Implications of perfect syncarpy in apple

Inter-carpel communication via the compitum is an important factor contributing to fruit quality in apple. **Sheffield *et al.* (pp. 583–591)** indicate that pollination levels among the five stigmas need not be uniform to obtain a full complement of seeds. The implications for crop yield and fruit quality are discussed.



Axillary buds in seeder and resprouter *Erica* seedlings Verdaguer and Ojeda (pp. 593–599)

examine axillary buds in the cotyledonary region and basal leaf nodes of seeder and resprouter seedlings of two *Erica* species. In both species, the unequivocal existence of lignotuber rudiments in seeder seedlings illustrates

an evolutionary transition from resprouter to seeder life history.



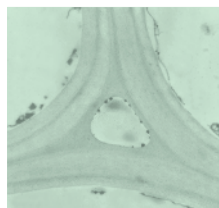
Genetic diversity of cultivated *Erythroxylum*

Genetic diversity of the four *Erythroxylum* taxa that contain lines of cultivated cocaine is examined by **Johnson *et al.* (601–608)**. Their AFLP DNA analysis shows a clear distinction between *E. coca* and *E. novogranatense* and between *E. coca* var. *coca* and *E. coca* var. *ipadu*, but negligible differentiation between *E. novogranatense* var. *novogranatense* and *E. novogranatense* var. *truxillense*.



Nickel entry inhibited by Ca crystals in seed coat

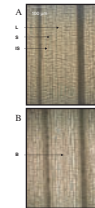
Ni contributes to the infertility of serpentine soils. X-ray elemental mapping and SEM imaging reveal that the seed coat of *Grevillea exul* var. *rubiginosa*, an endemic serpentine species, includes Ca crystals. These protect the inner tissues from Ni entry while Ni penetration of the barrier evokes mobilization of stored macronutrients (**Léon *et al.*, pp. 609–618**).



Ultrastructure of bamboo fibre cell walls

Bamboo fibre and parenchyma cell walls are multilayered.

Ultrastructural analyses by **Gritsch and Murphy (pp. 619–629)** show that the primary cell wall is composed of two layers and that fibre secondary cell walls begin to be laid down prior to the cessation of fibre elongation.



Leaf area and cell size are independent of plant height in semi-dwarf (*Rht8*) and tall (*rht8*) wheat

Dwarfing genes *Rht-B1b* and *Rht-D1b* confer gibberellin insensitivity in wheat by reducing cell size in culms, leaves and coleoptiles. However, **Botwright *et al.* (pp. 631–639)** show that in a doubled-haploid population of gibberellin-sensitive semi-dwarf *Rht8* and tall *rht8* lines, plant height and early vigour are independent of variation in cell size or cell number.



Nitrate can power growth osmotically at low irradiance

When photosynthesis is reduced by factors such as by low irradiance, NO_3^- rather than organic molecules may become an important foliar osmoticum. In support of this, **Andrews *et al.* (pp. 641–648)** show that NO_3^- accumulation in stems enables *Impatiens glandulifera* to attain heights of 3 m in deciduous woodland.



Seed germination and seedling emergence by three annuals in desert sand dunes of China

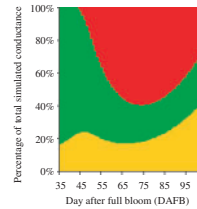
Little is known of the growth characteristics of species inhabiting Chinese deserts. **Tobe *et al.*** (pp. 649–659) suggest that the vertical distribution of seeds determines the proportion that germinate after precipitation with the remainder acting to maintain the seed bank over many years.



Picea glehnii is an effective Ni excluder

Picea glehnii is widely distributed on serpentine soils in northern Japan. In contrast to *P. jezoensis* and *P. abies*, *P. glehnii* possesses a marked ability to

exclude Ni when grown on serpentine soil (**Kayama *et al.***, pp. 661–672).



Fruit surface conductance to water vapour in peach fruit

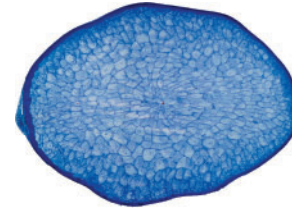
Gibert *et al.* (pp. 673–683) model seasonal variations in fruit surface conductance attributable to diffusion through stomata, cuticle or cuticular cracks. They show that when fruit expansion is fast, up to 60 % of total water vapour loss can take place through cracks in the cuticle.



Assimilate availability and fruit size

Zhang *et al.* (pp. 685–693) assess the impact on final fruit size of assimilate

supply from spur leaves and other organs in three cultivars of *Pyrus pyrifolia* differing in maturation date.



Effects of high night temperature on grain growth and endosperm cell size in rice

Grain weight diminishes under high temperature in many cereals. Using digitalized hand-traced images of endosperm cross-sections, **Morita *et al.*** (pp. 695–701) find that when night temperatures exceed day temperatures, the rate of grain growth and size of endosperm cells are affected detrimentally.